A. C. ATKINSON.

METAL MOLDING AND CASTING APPLIANCE.

APPLICATION FILED OCT. 14, 1916.

1,225,206. Patented May 8, 1917.

FIG. 1

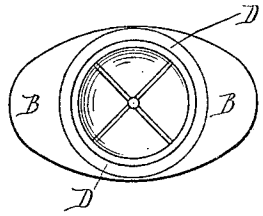


FIG. 2

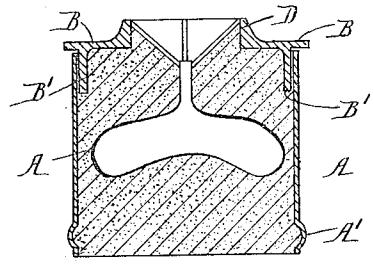


FIG. 3

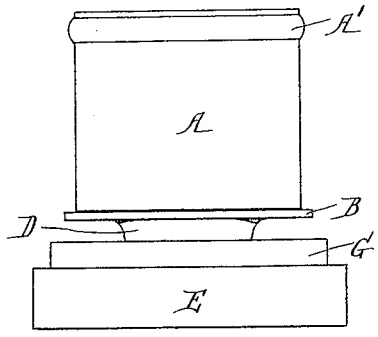


FIG. 5

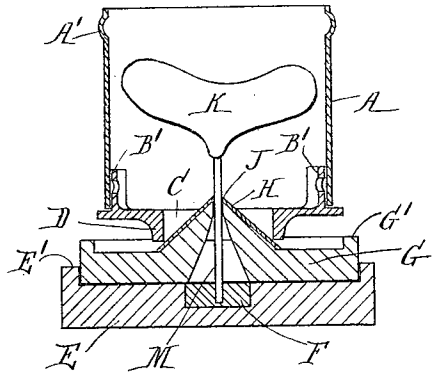


FIG. 4

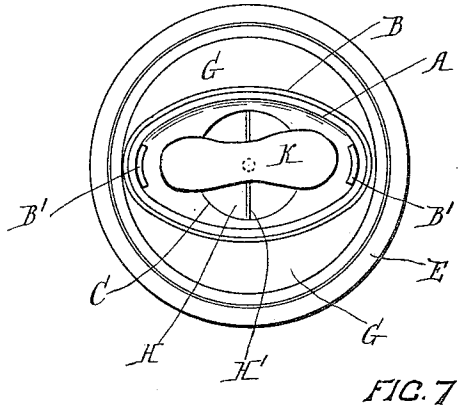


FIG. 6

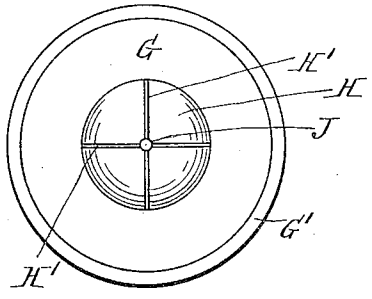
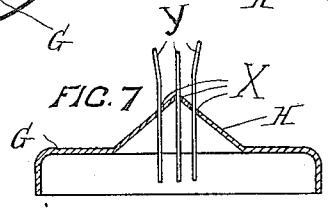


FIG. 7



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UNITED STATES PATENT OFFICE.

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METAL MOLDING AND CASTING APPLIANCE.

1,225,206. Specification of Letters Patent. Patented May 8, 1917.

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To all whom it may concern:

Be it known that I, ALFRED CHARLES ATKINSON, subject of the King of Great Britain, residing at Kelburn, Wellington, New Zealand, have invented a new and useful Metal Molding and Casting Appliance; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates particularly to the appliances employed in dentistry for the molding and casting of light metal parts, but it is applicable also to the molding and casting of any other metal work, such as jeweler's work.

The invention relates to improvements in the means employed in the well known system of molding and casting such articles, in which a pattern is made of a fusible material having a low melting point and which pattern is then placed within a mold box and surrounded by an investment material (generally a plaster of Paris composition) and the whole submitted to heat so as to melt and burn out the pattern, leaving a mold in the investment of corresponding shape. The metal of which the casting is to be formed is then melted and forced into the mold by artificial pressure, while the mold is still hot, through suitable runners which also allow of the draining away of the pattern material on the initial heating of the mold. The means provided are, however, applicable to any other system in which provision has to be made for the forcing of a metal having a high melting point into a mold formed in an investment material.

The invention consists in means designed to provide for the mold box being held in position and the pattern positioned within it, while the investment material is placed within the box, such means being of such a nature as to provide for the necessary metal melting chamber in the top end of the mold and for the runner or runners extending therefrom into the mold.

In fully describing the invention, reference will be made to the accompanying sheet of drawings, in which:—

Figure 1 is a plan, and

Fig. 2 a sectional elevation of the complete mold ready for casting.

Fig. 3 is an elevation.

Fig. 4 is a plan, and

Fig. 5 is a sectional elevation of the means comprising this invention arranged in the relative positions for carrying out the molding operations.

Fig. 6 is a plan of a part that will be hereinafter more fully referred to.

Fig. 7 is a section of an alternative form of the portion shown in Fig. 6.

The means employed consist of the ordinary metallic casing or molding box A of any desired size and cross sectional shape and having its top and bottom ends open. The casing in this invention is formed with a groove or recesses A′ around its inner surface near the bottom end into which the investment material with which the casing is filled, will enter so as to form a key to hold such material from movement in the casing when it has set.

The upper end of the casing in this invention also is provided with a cover B adapted to fit over it and having lugs B′ depending from its under surface which lugs engage with the inside of the casing. They are also formed with apertures into which the investment will pass so as to hold the cover firmly on the casing. The cover is formed with a central circular aperture C and surrounding such aperture on the top side, is a rim or collar D of any approved height.

A base plate E is provided for supporting the molding apparatus during the molding operation, such base plate being of circular form and having an upwardly projecting flange E′ around its outer edge and a well or depression F on its center. Fitting within the flange of the base plate is a disk G also formed with a flange G′ upon its edge and projecting upwardly therefrom. At the center of the disk is an upwardly projecting cone H having a central bore J extending down from its apex through the disk, which on its underside may be hollowed out approximately in conformity with the cone, as shown in Fig. 5 and for a purpose that will be hereinafter described. The cone is provided with a number of ribs H′ extending radially down its surface, as indicated in Fig. 6 which is a plan view of the disk and cone. The diameter of the base of the cone is made greater than the diameter of the aperture C of the casing cover.

In assembling the parts for the molding operation the disk G is placed in position on the base plate the well or depression F of which has previously been filled with a suitable wax material. The cover B of the

casing is then placed upon the cone H so that the cone passes up through the central aperture C and the edge of the rim D rests upon the cone. The pattern represented by K in the drawings, which has previously had the ordinary sprue or runner pin M attached to it by wax or other yielding material, is then positioned above the cover by passing the end of the sprue pin prevoiusly warmed down through the bore J of the cone and into the wax in the base plate beneath, which will then serve to support it and the pattern. The undercutting of the disk beneath the cone will allow of the sprue pin being passed down at any desired angle to the vertical and held by the wax, in order to adjust the position of the pattern above the casing cover.

The casing is then placed in position over the cover and by reason of the engagement of the rim of the cover aperture with the cone, such casing and cover may be tilted to any side in order to position the pattern centrally within the casing. The investment material is then poured in to fill up the casing and when it has set the casing is lifted, thereby drawing the sprue pin from its wax support and leaving a depression in the end of the investment corresponding in shape with the cone H and having grooves extending down the surface of such depression corresponding with the ribs H′. The sprue pin is then withdrawn leaving the runner hole formed thereby extending from the bottom of the depression into the mold as shown in Fig. 2.

The casting is then carried out in the usual way the mold being heated and the metal placed within the depression in the top end and melted by any approved means and then forced into the mold through the runner by steam or compressed air obtained by any of the known methods. The grooves of gases and air from the mold instead of formed by the ribs H′ provide for the escape having to pass up through the mass of the metal in the depression.

When it is desired to mold and cast a number of articles at the same time, the disk may be varied in shape as shown in Fig. 7. In such a case the cone is formed with a number of apertures x in its surface through which the several sprue pins y of the different patterns are passed so as to allow for their proper disposition within the casing in relation to one another and to provide the requisite runners for such molds.

I claim:—

1. In means for the purposes herein described the combination with a mold casing, of a cover adapted to fit over one end thereof and formed with a central circular aperture and with a rim surrounding such aperture on its outer surface, substantially as herein specified.

2. Means for the purposes herein described comprising the combination with the mold casing, of a cover therefor formed with a central circular aperture and with a rim on its outside surrounding the edge of such aperture, and a disk plate having a cone shaped center upon which the aperture in the casing cover is adapted to pass and rest, such cone being formed with an aperture extending vertically through it, substantially as herein specified.

3. In the means for the purposes herein described, the combination with the mold casing, of a cover therefor formed with a central circular aperture, a disk having a central upwardly projecting cone upon which the aperture in the casing cover is adapted to pass and rest and formed with an aperture extending vertically through the cone, and a base plate on which the disk rests formed with a depression beneath the cone of the disk.

4. Means for the purposes herein described comprising the combination with the mold casing, of a cover therefor formed with a central circular aperture and with a rim on its outside surrounding the edge of such aperture, and a disk plate having a cone shaped center upon which the aperture in the casing cover is adapted to pass and rest, such cone being formed with an aperture extending vertically through it, and formed with a number of slight ribs extending radially down its surface, substantially as and for the purposes specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALFRED CHARLES ATKINSON.

Witnesses:
W. ALEXANDER,
M. E. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."